Ontario

Modular Training Standards

Perform Mechanical Cut and Fill Mining – Captive Stope

Program #770010

Production Specialties Group
Module U0055b

Ministry of Training,
Colleges and Universities

2008-01524/

Ministry of Training,
Colleges and Universities

Modular Training Standards

Perform Mechanical Cut and Fill Mining – Captive Stope

Program #770010

Production Specialties Group
Module U0055b

Revision date: October 2003
Printing date: September 2004

This document is the property of the trainee/ employee named inside and represents the official record of his/her training.

Printed on recycled paper ISBN 0-7794-6095-2 © Queen's Printer for Ontario, 2004 04-183f

CONTENTS **PAGE**

Competency Analysis Profile

Preface 1-2

Notice/Declaration for Collection of Personal Information 2

Important Directions to Trainers/ Trainee 3

Underground Hard Rock Mining Specialty Modules Listing by Groups 4-5

Trainee Completion Form 6

Training Unit Completion Form 6

TRAINING UNIT

TRAINING UNIT	TITLE	
U0055b.0	Perform Mechanical Cut and Fill Mining - Captive Stope	7-14

AREAS OF COMPETENCY

COMPETENCY ANALYSIS PROFILE
PERFORM MECHANICAL CUT AND FILL MINING - CAPTIVE STOPE
ON-THE-JOB TRAINING STANDARDS
-SKILLS-

PERFORM MECHANICAL CUT AND FILL MINING - CAPTIVE STOPE **U0055b.0**	Identify and respond to workplace hazards 0055b.01	Inspect and scale workplace 0055b.02	Extend services 0055b.03	Manage/Control muck 0055b.04	Install staging 0055b.05
	Secure ground 0055b.06	Prepare face for drilling 0055b.07	Perform pre-operational checks on carrier 0055b.08	Start up carrier 0055b.09	Conduct operational checks on carrier 0055b.10
	Operate drill carrier 0055b.11	Position drill carrier 0055b.12	Perform pre-operational checks on drill 0055b.13	Set up drill(s) 0055b.14	Drill face 0055b.15
	Tear down and store drill equipment 0055b.16	Shut down carrier 0055b.17	Load face 0055b.18	Blast face 0055b.19	Perform secondary blasting 0055b.20
	Operate lifting mechanism(s) 0055b.21	Raise man ways/mill holes 0055b.22	Construct fill fence and/or catwalk 0055b.23	Open new cut 0055b.24	

PREFACE

This training document was developed by the Program Development and Standards Unit of the Ministry of Training, Colleges and Universities, in consultation with representatives from the Underground Hard Rock Mining industry. These Training Standards are intended to be used by trainee, trainers/instructors and companies as a "blueprint" for training or as a prerequisite for government accreditation/certification. While this training document is intended as guidelines for training, all issues might not apply in all operations.

A Basic Underground Hard Rock Miner (entry level) is a worker who has achieved accreditation in the entire Common Core Program # 770010. The Mining Tripartite Committee recommends that the employer must provide training in the entire common core for the Basic Underground Hard Rock Miner Training Program, to the worker, within the first year of employment. The prerequisite common core and specialty modules related to a specialty module must be taken before training in the specialty module, e.g. Jumbo Drill *NOTE: To be trained and accredited in this module, the prerequisite modules from Program #770010 are U0000, U0001, U0002, U0004, U0006 and U0011. The other prerequisite modules where applicable are U0005, U0007, U0014, U0015 and U0082*. Employers have a responsibility to train workers for the work to be done.

The first three modules of Program #770010 - U0000, U0001 and U0002 are prerequisites to all other modules for the program. They must be completed before any other modules can be done and before the employee can be permitted to work underground.

Under the Occupational Health & Safety Act - R.R.O. 1990 Regulation 854, 11.3 there is an allowance for the recognition of equivalent training from other jurisdictions to Ontario training. Based on a comparison of the two programs, the Mining Tripartite Committee has deemed Quebec's Formation Modulaire du Travailleur Minier (FMTM) program to be equivalent to Ontario's Program #770010 Common Core except for specific mine orientation (U0000, Follow Surface and Underground Induction Procedures) and secondary blasting (U0006, Blast Rock). Employers should contact their local apprenticeship office for details about the requirements associated with these equivalencies.

New trainees or experienced miners must obtain accreditation in the same way. Each must demonstrate the skills specified in each Performance Objective to the described minimal acceptable standard as prescribed in each module. These demonstrations must be administered in an operating mine by a trainer designated by the company who shall follow the Performance Demonstration Guidelines approved by the Mining Tripartite Committee.

The care and maintenance of this book is the joint responsibility of the trainee and the employer. The Training Standards were developed specifically for documenting the trainee's acquisition of skills.

PREFACE - Cont'd

Areas of the Basic Underground Hard Rock Common Core including mechanical staging, drilling, rock bolting, and mucking may infringe on some speciality modules for purposes of safety and technological changes. However, accreditation in these areas of the Common Core is not intended to replace accreditation in the speciality modules.

Throughout the document the term "including" is often used. "Including" means : one or more of the items listed, but not limited to those items included in the list.

N.B. Re: Lock out and /or tag, where it is practical or possible to lock, then locking and tagging should be the norm.

NOTICE/DECLARATION FOR COLLECTION OF PERSONAL INFORMATION

1. This information is collected under the authority of the Order-In-Council Number 701/85.

2. The information is collected for the purpose of administering this modular training program within the Province of Ontario.

3. Questions regarding collection and use of this information may be directed to:

Director of Apprenticeship
Workplace Training Branch
Ministry of Training, Colleges and Universities
900 Bay Street
17th Floor
Toronto, Ontario
M7A 1L2
(416) 326-5605

IMPORTANT DIRECTIONS TO TRAINERS

Trainers instructing workers in the specialty modules for Program 770010 must meet the Trainer Qualification and Criteria Guidelines for Program #770010. They must be accredited in the Basic Common Core Underground Hard Rock program #770010 and the specialty module they will be instructing. Contact your local apprenticeship office for a copy of the Trainer Qualification and Criteria Guidelines.

The Training Standards identify skills required for this occupation and its related training program.

These Training Standards have been written in concise statements which describe how well a trainee must perform each skill in order to become competent.

In using these Training Standards, trainers will be able to ensure that the trainee is developing skills detailed for the occupation.

Trainers and trainees are required to sign off and date the skills following each successful acquisition.

Employers participating in this training program will be designated as the Signing Authority and are required to attest to successful achievement in the space provided at the end of each unit.

IMPORTANT DIRECTIONS TO THE TRAINEE

Trainee

1. It is the responsibility of the trainee to inform the local Apprenticeship Client Services office regarding the following changes:

    - change of trainee name or address;
    - transfer to a new employer;

2. Training Reports must be signed for modular trainees by a Ministry of Training, Colleges and Universities designated Signing Authority and forwarded to a local Apprenticeship Client Services office.

3. At the completion of training, the Trainee Completion Form must be completed and signed off by the Signing Authority and submitted to local Apprenticeship Client Services office.

PERFORM MECHANICAL CUT AND FILL MINING - CAPTIVE STOPE

UNDERGROUND HARD ROCK MINING SPECIALITY MODULES LISTING BY GROUPS

GROUP 1 PRODUCTION SPECIALTIES

U0051 Perform Non-Mechanized Room and Pillar Mining
U0052 Perform Mechanized Room and Pillar Mining
U0053 Perform Shrinkage Mining
U0054 Perform Regular Cut and Fill Mining
U0055aPerform Mechanical Cut and Fill Mining-
Non Captive Stope
U0055bPerform Mechanical Cut and Fill Mining-
Captive Stope
U0056 Perform Square Set Mining
U0057 Perform Under Cut and Fill Mining
U0058 Perform Non-Mechanized Bulk Mining
U0059 Perform Mechanized Bulk Mining

GROUP 2 DEVELOPMENT SPECIALITES

U0016 Perform Non Mobile-Trackless Drifting
U0060 Perform Mobile Drifting
U0061 Perform Non-Mobile Track Drifting
U0062 Perform Conventional Untimbered Raising
U0063 Perform Conventional Timbered Raising
U0064 Perform Mechanized Raising
U0065 Perform Drop/Inverse Raising Mechanized/NonMechanized
U0066aPerform Shaft Sinking- Timber Lining Installation
U0066bPerform Shaft Sinking- Concrete Lining Placement
U0066cPerform Shaft Mucking
U0066dPerform Shaft Drilling and Blasting

GROUP 3 HAULAGE SPECIALTIES

U0015 Maintain Tire and Wheel Assemblies
U0017 Operate Scram Drift
U0019 Perform Track Haulage- Operate
U/G haulage Train Remote Control
U0020 Perform Trackless-Haulage Operate
Scoop Tram-Remote Control
U0023 Operate Front-End Loader
U0067 Perform Track Haulage- Operate
U/G Haulage Train

GROUP 4 DRILLING AND BLASTING SPECIALTIES

U0069 Operate Non-Mechanized Long Hole Drill
U0070 Operate In-The-Hole Drilling
U0072 Operate Raise Bore Drill
U0089 Operate Mechanized Jumbo Drill
U0090 Operate Mechanized Long Hole Drill
U0092 Perform Mobile Bulk Blasting
U0093 Perform Non-Mobile Bulk Blasting

GROUP 3 HAULAGE SPECIALTIES - cont'd

U0068aPerform Trackless Haulage-Operate Scoop Tram Draw Point
U0068bPerform Trackless Haulage-Operate Scoop Tram Production/Development
U0091 Operate Haulage Truck

GROUP 5 GENERAL SERVICES
U0013 Operate Lifting Mechanism(s)
U0014 Operate Forklift
U0018 Operate Mechanized Rock Bolter
U0021 Operate Bulldozer
U0022 Operate Grader
U0024 Operate Utility Vehicle
U0025 Operate Mechanized Muck Conditioner
U0026 Operate Mechanized Cable Bolter
U0027 Operate Non-Mechanized Cable Bolter
U0028 Operate Scissor Lift
U0029 Operate Rock Breaker
U0033 Operate Oxyacetylene Cutting Equipment
U0035 Operate Backhoe
U0036 Operate Overhead Crane
U0074 Operate Mine Hoist- Friction or Drum
U0075 Install and Maintain Track System
U0076 Perform Fill Placement
U0077 Operate Underground Crusher
U0078 Operate Underground (Filter) Decantation System
U0079 Operate Conveyor
U0080 Install and Maintain Underground Pipe System
U0081 Operate Tipple
U0082 Install and Maintain Underground Ventilation Equipment

GROUP 6 SHAFT SERVICES
U0083 Operate Cage
U0084 Perform Shaft Maintenance
U0088 Operate Skip

GROUP 7 CONSTRUCTION SERVICES
U0085aConstruct Concrete Installations
U0085bConstruct Timber Installations
U0085cConstruct Steel Installations
U0086 Perform Shotcreting

PERFORM MECHANICAL CUT AND FILL MINING - CAPTIVE STOPE

TRAINEE COMPLETION FORM

Trainee Name _____
Print

_____
Signature

Social Insurance Number _____

The Training Unit, when completed, should be signed off by Trainer/ Signing Authority below. Submit required documentation to your local Apprenticeship Client Services office. Any supporting documentation should also be attached.

Employer Name: _____

Address: _____

Telephone: _____

Signing Authority: _____
Signature

TRAINING UNIT COMPLETION FORM

TRAINING UNIT	TITLE	SIGNING AUTHORITY
U0055b.0	Perform Mechanical Cut and Fill Mining - Captive Stope	_____

U0055b.0 PERFORM MECHANICAL CUT AND FILL MINING - CAPTIVE STOPE

GENERAL PERFORMANCE OBJECTIVE

Perform mechanical cut and fill mining – captive stope, by identifying and responding to workplace hazards; inspecting and scaling workplace; extending services; managing/controlling muck; installing staging; securing ground; preparing face for drilling; performing pre-operational checks on carrier; starting up carrier; conducting operational checks on carrier; operating drill carrier; positioning drill carrier; performing pre-operational checks on drill; setting up drill; drilling face; tearing down and storing drill equipment; shutting-down drill carrier; loading face; blasting face; performing secondary blasting; operating lifting mechanism (s); raising man ways/mill holes; constructing fill fence and/or catwalk; and opening a new cut according to government legislation, company standards and manufacturer specifications.
NOTE: To be trained and accredited in this module, the prerequisite modules form Program #770010 are: U0000, U0001, U0002, one of U0003 or U0003a or U0003b, U0004, U0005, U0006, U0007, U0011, U0068b and U0089. The other prerequisite modules where applicable are U0013, U0015, U0018, U0020, U0022, U0024, U0028, U0033, U0060, U0076, U0080, U0082, U0085a, U0086 and U0091.

PERFORMANCE OBJECTIVE

Trainer's Name (Print) _____

Trainee's Name (Print) _____

SKILLS

0055b.01 Identify and respond to workplace hazards, including: ground conditions, ventilation, open holes above/ below, and housekeeping, by isolating area; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation and company standards.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

U0055b.0 PERFORM MECHANICAL CUT AND FILL MINING-CAPTIVE STOPE - Cont'd

0055b.02 Inspect and scale workplace, by selecting scaling bar for the specific job based on type, size and condition; fastening and connecting hoses; washing down area; setting water flow to control dust; performing scaling procedures; checking ventilation flow; and taking corrective action and/or reporting deficiencies according to government legislation and company standards.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.03 Extend services, including: air, water, power, ventilation, blasting and communication lines, by bleeding air and water lines; flushing and installing headers; fastening, securing, hanging and supporting services; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.04 Manage/Control muck, to designated working elevation, using muck removal and water sprays equipment, by performing pre-operational checks on equipment; starting up equipment; conducting operational checks; operating equipment; positioning equipment for loading, hauling and dumping; shutting down and parking equipment; applying wheel chocks; managing muck pile; storing mucking equipment in designated/approved area; handling explosives and disposing of foreign material; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

U0055b.0 **PERFORM MECHANICAL CUT AND FILL MINING** - Cont'd

0055b.05 Install staging, by determining timber/steel staging and materials requirements, including: eye bolts, ladders, planks, sprags, bull horn, pins and raise bars; assembling timber and materials in staging area; assembling power and hand tools, including axes, hammers, nails, saws, chains, and stoper and jack leg drills; constructing and erecting staging and ladders; using fall protection, including: fall arrest and/or travel restraint systems; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.06 Secure ground, by identifying and responding to workplace hazards; inspecting and scaling rock face; operating and maintaining drills; installing ground support; tearing down and storing staging and equipment; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.07 Prepare face for drilling, by blowing/flushing lines; connecting air and water hoses; washing face; scaling loose rock; cleaning and marking bootlegs and checking old-cut, using non-sparking materials; applying procedures for handling misholes; marking line, grade and drill pattern; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

U0055b.0 **PERFORM MECHANICAL CUT AND FILL MINING** - Cont'd

0055b.08 Perform pre-operational checks on carrier, by testing power source; checking fluid levels; following refueling and lubricating procedures; inspecting principle components, including: steps, guardrails and handrails, cab/canopy, chassis, engine/power source, power train, controls, booms, jacks, wheel chocks, trailing cable, cable reel, boom cylinders, lighting, warning and communication systems; visually inspecting fire extinguishers and fire suppression systems; checking pins and nozzles; inspecting tires and wheel assemblies; inspecting/testing braking systems; using 3 point contact while mounting and dismounting; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.09 Start up carrier, by activating power source; using warning systems; observing equipment operation, gauges and load limits; checking for clearances and activity in area; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.10 Conduct operational checks on carrier, by monitoring gauges, meters and lights, including: oil and air pressure, lights and warning systems, temperature, alternator output, transmission and torque pressure; listening for unusual noises in engine/power train; inspecting steering; testing brakes; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

U0055b.0 **PERFORM MECHANICAL CUT AND FILL MINING** - Cont'd

0055b.11 Operate drill carrier, by ensuring clearances and clear machine path; observing load limits; positioning/securing load; testing brakes; complying with speed limits, traffic signs and signals; selecting gears for ramps; maintaining road ways; ensuring required ventilation; noting direction of ventilation flow and position of ventilation/fire doors; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.12 Position drill carrier, within the designated work area, by setting park brake; lowering stabilizer jacks; positioning wheel chocks; locking out and/or tagging; and repairing and /or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.13 Perform pre-operational checks on drill, with controls in off position and air and water header open, by inspecting drill components, including: booms, boom cylinders, pins and hoses; draining air systems and compressors; inspecting proximity switches; checking emergency stop button; inspecting remote drive system; inspecting operator drill platform or basket and console; inspecting drill steel, drill steel centralizers, limit switches, pendant and carousel; inspecting cable reel/spools and trailing cable; filling lubricators; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.14 Set up drill(s), with controls in off position, by selecting/checking rock drill steel and bits; blowing air and water hoses; positioning drill; connecting lubricator to hoses; connecting hoses to drill; filling lubricator; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

U0055b.0 **PERFORM MECHANICAL CUT AND FILL MINING** - Cont'd

0055b.15 Drill face, by collaring hole and drilling to predetermined depth and pattern; checking bootlegs and old cut; following line and grade; performing secondary scaling; monitoring general condition of drill, including: lubrication, hoses and controls; ensuring sound footing; using personal protective equipment; identifying/avoiding pinch points; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.16 Tear down and store drill equipment, by shutting off and bleeding air and water lines; disconnecting air and water hoses; shutting off power; performing post-operational checks; completing reports; storing drilling equipment in designated/approved areas; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.17 Shut down carrier, by bleeding lines; positioning jacks; disconnecting power cables; applying wheel chocks; placing booms in travel position; parking in designated/approved area; performing post-operational checks; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.18 Load face, by cleaning drill holes; selecting blasting agent, detonators and primers; determining firing sequence; loading holes; wiring face; storing loading equipment; gathering unused explosives and materials and returning to designated storage areas; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

U0055b.0 PERFORM MECHANICAL CUT AND FILL MINING - Cont'd

0055b.19 Blast face, by ensuring required ventilation; noting direction of ventilation flow and position of ventilation/fire doors; controlling dust; protecting equipment; checking condition of firing devices/circuits; ensuring person in charge of blast initiates the blast; clearing area; placing guards at all entrances/affected areas; notifying guards of blast location and time; applying firing device; conducting post firing checks; waiting prescribed guarding period; removing guards; reporting blast; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.20 Perform secondary blasting, by identifying and responding to work place hazards; inspecting and scaling workplace; selecting detonators; transporting explosives and detonators for sandblasting or block holing; checking and cleaning block holes; ensuring required ventilation; noting direction of ventilation flow and position of ventilation/fire doors; controlling dust; protecting equipment; checking condition of firing devices; gathering unused explosives and returning to designated storage area; applying firing devices; loading hole(s); clearing area; placing guards at all entrances/affected areas; blasting oversize muck; re-blasting misholes; checking circuits; ensuring person in charge of blast initiates the blast; waiting prescribed guarding period; performing post firing checks; removing guards; tearing down, moving, cleaning and storing loading equipment; reporting blast; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.21 Operate lifting mechanism(s), including: tugger hoist, by completing pre-operational checks; starting equipment; raising and lowering materials; loading/unloading materials, using pre-determined signals; operating audio and/or visual communication systems; stopping equipment; completing post-operational checks; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

U0055b.0 PERFORM MECHANICAL CUT AND FILL MINING - CAPTIVE STOPE - Cont'd

0055b.22 Raise man ways/mill holes, for fill placement, by extending, bracing and sealing man ways/mill holes, using materials, including: cribbing, square set timber, braces, fabrene, burlap, cement, wire mesh, and prefabricated sections; maintaining line and grade; using fall protection, including: fall arrest and/or travel restraint systems; installing landing support and spacing; installing ladder support and spacing; locking and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.23 Construct fill fence and/or catwalk for fill placement, by securing fill fence and/or catwalk, using materials, including: chains, cables, screen, support anchors, pins, ladders, guardrails, planks, and lagging; ensuring required limits for height, direction and length; using fall protection, including: fall arrest and/or travel restraint systems; locking and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specificationS.

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

0055b.24 Open new cut, by extending services, including: air, water, and ventilation; constructing staging; setting up drill(s); drilling new cut; using uppers or flat holes; following layout; tearing down, moving and storing drilling equipment; locking out and/or tagging; and repairing and/or reporting deficiencies according to government legislation, company standards and manufacturer specifications

Date Completed	Trainer's Signature	Trainee's Signature
_____	_____	_____

	Employer's Name	Employer's Signature
	_____	_____